What are Watersheds?

http://www.ncstormwater.org/pdfs/viewable.pdf

A watershed is the area of land that drains to a common body of water. Water from rain and snow falls on the land surface and then drains or seeps into a wetland, marsh, stream, river, lake or into the groundwater. Water always runs to the lowest point in a watershed. Some water soaks into the ground, where it becomes groundwater. Other water flows across fields, forests, streets, parking lots and lawns before it flows into streams, rivers, lakes and estuaries. This water is called stormwater runoff.

Watersheds are habitats for plants and animals and are places for people to live, work and play. We depend on water within our watersheds to supply drinking water & water for the food we eat.

North Carolina's River Basins

North Carolina has 17 river basins. Each is made up of smaller watersheds. Rivers from these 17 river basins flow into either the Gulf of Mexico or Atlantic Ocean. The Eastern Continental Divide separates the watersheds of these two huge water bodies. A continental divide is a line of mountains or hills that form a border between two watersheds. Water that falls on one side of the line eventually travels to one ocean or estuary. Water that falls on the other side travels to another ocean or estuary. The New, Watauga, French Broad, Little Tennessee and Hiwassee River Basins flow to the Mississippi River and eventually to the Gulf of Mexico. All other river basins in North Carolina flow to the Atlantic Ocean. Everyone lives in a watershed.

A Healthy River Basin

A healthy river basin can help people in many ways. When a river basin functions properly, it can capture water when there is a storm. The water soaks into the ground instead of flooding the land. From there it can slowly release through streams, rivers and wetlands. When stormwater flows across the land, it picks up sediment, leaves, oil, fertilizers, pesticides and anything else in its way. Sediment and chemicals can pollute the river, stream or lake where the water ends up. The health of a river basin is affected by the people living within its borders and the choices they make every day.

People can take action to reduce the pollution that ends up in stormwater. Building ponds and wetlands helps reduce the amount of stormwater that runs off, which can reduce flooding.

Source: Conservation Technology Information Center
http://www2.ctic.purdue.edu/kyw/

CITY OF ROCKY MOUNT NORTH CAROLINA stormwater management

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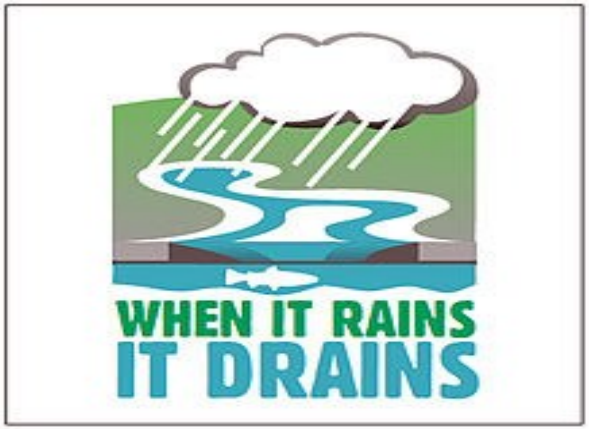
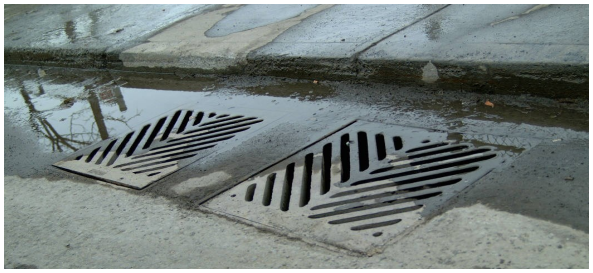


Stormwater

http://www.ncstormwater.org/pages/stormwater_faqspage.html

What is stormwater runoff?

Stormwater runoff is water from rain or melting snow that "runs off" across the land instead of seeping into the ground. This runoff usually flows into the nearest stream, creek, river, lake or ocean. The runoff is not treated in any way.



What is polluted runoff?

Water from rain & melting snow either seeps into the ground or "runs off" to lower areas, making its way into streams, lakes and other water bodies. On its way, runoff water can pick up and carry many substances that pollute water. Some - like pesticides, fertilizers, oil and soap – are harmful in any quantity. Others – like sediment from construction, bare soil, or agricultural land, or pet waste, grass clippings and leaves – can harm creeks, rivers and lakes in sufficient quantities.

In addition to rain & snowmelt, various human activities like watering, car washing, & malfunctioning septic tanks can also create polluted runoff that carries pollutants to creeks, rivers & lakes. Polluted runoff generally is present anywhere people use or alter the land. For example, in developed areas, little of the water that falls on hard surfaces like roofs, driveways, parking lots or roads can seep into the ground. These impervious surfaces create large amounts of runoff that picks up pollutants. The runoff flows from gutters & storm drains to streams. Runoff not only pollutes but erodes streambanks. The mix of pollution & sediment muddies the water & causes problems downstream.

What causes polluted stormwater runoff?

Polluted stormwater runoff generally is present anywhere people use or alter the land. People going about their daily lives are the number one source of stormwater pollutants. Most people are unaware of how they impact water quality. Some common examples include over fertilizing lawns, excessive pesticide use, not picking up pet waste, using salt or fertilizer to de-ice driveways, letting oil drip out of their vehicles and littering. Developed areas in general, with their increased runoff, concentrated numbers of people and animals, construction and other activities, are a major contributor to Non Point Source (NPS) pollution, as are agricultural activities. Other contributors include forest harvesting activities, roadways, and malfunctioning septic systems.

Why do we need to manage stormwater & polluted runoff?

Polluted stormwater runoff is the number one cause of water pollution in North Carolina. In most cases in North Carolina today, stormwater either does not receive any treatment before it enters our waterways or is inadequately treated.

Polluted water creates numerous costs to the public and to wildlife. As the saying goes, "we all live downstream." Communities that use surface water for their drinking supply must pay more to treat polluted water than clean water.

Polluted water hurts the wildlife in creeks, streams, rivers and lakes. Dirt from erosion, also called sediment, covers up fish habitats and fertilizers can cause too much algae to grow, which also hurts wildlife by using up the oxygen they need to survive. Soaps hurt fish gills and fish skin, and other chemicals damage plants and animals when they enter the water.

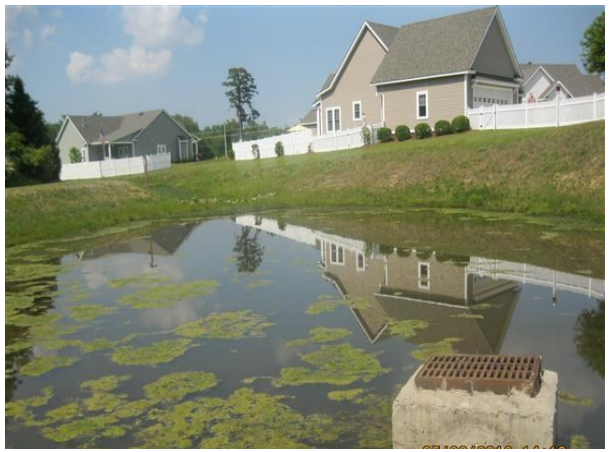
The quantity of stormwater is also a problem. When stormwater falls on hard surfaces like roads, roofs, driveways and parking lots, it cannot seep into the ground, so it runs off to lower areas. To give you an idea of the difference a hard surface makes, consider the difference between one inch of rain falling onto a meadow and a parking lot. The parking lot sheds 16 times the amount of water that a meadow does!

Because more water runs off hard surfaces, developed areas can experience local flooding. The high volume of water also causes streams banks to erode and washes the wildlife that live there downstream.

How are stormwater and runoff "managed"?

"Best management practices" is a term used to describe different ways to keep pollutants out of runoff and to slow down high volumes of runoff. Preventing pollution from entering water is much more affordable than cleaning polluted water! Educating state residents about how to prevent pollution from entering waterways is one best management practice. Laws that require people and businesses involved in earth disturbing activities --like construction and agriculture -- to take steps to prevent erosion are another way to prevent stormwater pollution. There are also laws about litter, cleaning up after pets and dumping oil or other substances into storm drains. Education and laws are just two Best Management Practice (BMP) examples. Some BMPs are constructed to protect a certain area. Some are designed to slow down stormwater, others help reduce the pollutants already in it – there are also BMPs that do both of these things.

Detention ponds (*see below*), built to temporarily hold water so it seeps away slowly, fill up quickly after a rainstorm and allow solids like sediment and litter to settle at the pond bottom. Then, they release the water slowly. These ponds are one "constructed" BMP example. Green roofs, storm drain grates, filter strips, sediment fences and permeable paving are other examples.



If it only affects streams and creeks, why should I care?

Streams and creeks feed into rivers, lakes and the ocean. We all drink water, so we are all affected when our water is polluted. When water treatment costs rise, the price of drinking water goes up. If you like to fish, swim or boat, you may have heard or been affected by advisories warning you not to swim, fish or boat in a certain area because of unhealthy water or too much algae. Shellfish like clams and oysters cannot be harvested from polluted waters, so anyone that enjoys these foods or makes a living from the shellfish industry is affected. Money made from tourism and water recreation can also be impacted, as are businesses and homes flooded by stormwater runoff. When we pollute our water, everyone is affected!

How does this benefit the average taxpayer?

When our water is polluted, we all pay in one way or another. Damage from urban flooding can raise merchant prices and insurance rates. Sediment and pollution laden water takes more money to treat before it can be used for drinking water. Tourism and recreation businesses suffer along with residents when swimming, fishing and boating are curtailed. Shellfish become more expensive and harder to harvest when shellfish beds close. And the list goes on. Because everyone plays a role in creating the pollution in stormwater runoff, we all have a role in cleaning it up.

What can I do to reduce the amount of stormwater pollution I contribute?

- If you have a car, maintain it so it does not leak oil or other fluids. Be sure to wash it on the grass or at a car wash so the dirt and soap do not flow down the driveway and into the nearest storm drain.
- If you have a yard, do not over fertilize your grass. Never apply fertilizers or pesticides before a heavy rain. If fertilizer falls onto driveways or sidewalks, sweep it up instead of hosing it away. When cutting your lawn, don't blow the grass clippings in the road. Mulch leaves & grass clippings & place leaves **in the yard at the curb, not in the street.** Doing this keeps leaves out of the gutter, where they can wash into the nearest storm drain.

- Turn your gutter downspouts away from hard surfaces, seed bare spots in your yard to avoid erosion & consider building a rain garden in low-lying areas of your lawn.
- If you have a septic system, maintain it properly by having it pumped every three to five years. If it is an older system, be sure it can still handle the volume placed on it today. Never put chemicals down septic systems, they can harm the system and seep into the groundwater.
- Pet owners should pick up after their pets and dispose of pet waste in the garbage.
- Keep lawn & household chemicals tightly sealed & in a place where rain cannot reach them. Dispose of old or unwanted chemicals at household hazardous waste collections sites or events.
- Never put anything in a storm drain.
- **Don't litter!**